



Original Research Article

Recurrence rate of pterygium following Excision by bare sclera technique versus conjunctival autograft

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ABSTRACT

Purpose: To compare the post operative results of pterygium excision surgery by bare sclera technique versus conjunctival autograft technique.

Materials and Methods: Retrospective analysis of patients who underwent pterygium excision with either bare sclera technique or with conjunctival autograft between March 2015 to March 2020 was done. Data of 38 eyes was shortlisted and analyzed. Data analysis was done using Microsoft Excel 2017 and SPSS Software.

Results: 38 patients were shortlisted and divided into two groups. Bare sclera technique (Group A) was used in 19 patients, whereas Pterygium excision with conjunctival autograft (Group B) was done in 19 patients.

There was no major vision threatening complications in any group. Moreover, there was not a single case of graft rejection or graft shedding in group B.

Conclusion: Comparison of the groups showed that the rate of recurrence was more in group A (Bare Sclera Technique Group) as compared to group B (Excision with Autograft method). Although conjunctival autograft technique is comparatively difficult and time consuming, but cosmetic results are better and rewarding.

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1. Introduction

Pterygium is a triangular growth of fibrovascular tissue encroaching on the cornea, which appears to be continuous with the conjunctiva.¹ It is more common on the nasal side. Its Prevalence rates range from 0.7% to 31% in various studies and the condition is more common in warm, dry climates.² Ultraviolet light damages the limbal stem cell barrier which leads to conjunctivalization of the cornea is the currently accepted etiology of this condition.

Treatment of Pterygium is surgical excision only and there are various techniques for that. After Cataract, pterygium excision is the most common surgical procedure done in Ophthalmology. Conservative therapy is preferred. Indications for surgical intervention are diminution of visual

acuity due to induced astigmatism or encroachment of visual axis, cosmetic deformation, watering irritation and discomfort, restriction of ocular mobility or progressive threatening encroachment of visual axis.

Recurrence after surgical intervention is common; therefore firm indication for surgical intervention should exist before primary excision. As there are numerous techniques of surgical excision available, it indicates that no single approach is universally successful.³

Excision of the pterygium leaving sclera bare is the basic technique. However, its postoperative recurrence rate can be up to 89% and its severity may vary according to the adopted approach and preoperative conditions because fibrovascular growth may occur also with greater extension than its primary presentation.⁴

To prevent recurrences, various techniques used are Pterygium excision with implantation of head in lower

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formix, excision with MMC, pterygium excision with conjunctival autograft⁵ (limbal to limbal orientation or graft rotation) fixation with Glue, Vicryl Sutures or cut and Place method, amniotic membrane graft, graft with MMC. Techniques using sutures or fibrin glue are vulnerable to associated complications. Suturing can lead to longer surgical time, formation of granuloma, giant papillary conjunctivitis, patient discomfort. Whereas plasma-derived fibrin glue has the potential risk of prior disease transmission and anaphylaxis in susceptible individuals. Cut and place method is not very popular because of fear of graft loss in immediate post op period.

Fibrin glue is a better choice because of its biological and biodegradable properties, with a shorter operative time, without inducing inflammation and thus reduced post operative complaints.⁶ But because of its cost and short shelf life after reconstitution, it is not economically viable reposition.

Pterygium excision with conjunctival autograft has exhibited good results because it maintains the ocular surface even and restores the anatomy which existed before the corneal invasion caused by the pterygium.

Pterygium excision with autologous conjunctival grafting appears to be the best method, giving both low recurrence rate and high safety.^{7,8} The recurrence is usually seen within 6 months but can sometimes occur later.⁹

In the present study, we compared the recurrence rates of pterygium excision with bare sclera technique versus excision with conjunctival autograft.

2. Materials and Methods

This retrospective study includes 38 patients who were selected for excision of pterygium during March 2015 to March 2020. Patients were divided into 2 groups: Group A included 19 patients selected for bare sclera technique while the Group B included 19 patients selected for autograft technique. Surgical excision with bare sclera tech was performed in 19 patients. These were all primary patients with Grade I to Grade II pterygium. Autograft was done in 19 patients. 13 patients had primary pterygium grade 2-3, 6 patients has recurrent pterygium.

Pterygium was graded depending on the extent of corneal involvement: Grade I – crossing the limbus, Grade II – midway between limbus and pupil, Grade III – reaching up to pupillary margin, and Grade IV – crossing pupillary margin. Surgeries were performed by one experienced surgeon with the same protocols so as to avoid any surgical bias. Patients where followed up upto 12 months, and those who didn't turn up for any reason were excluded from the study.

Patients' data sheet included age of the patient, sex, past eye surgeries, indication for surgery, visual acuity before and after surgery, surgical technique and complications, postoperative medications, postoperative complications, recurrence, and final cosmetic result.

In case of bare sclera technique, only topical anesthesia (Proparacaine eye drop) was used. Barraquer wire speculum was used to open and hold the lids. Body of pterygium is dissected about 4 mm from limbus, down to bare the sclera and reflected over cornea. The pterygium head is avulsed using Lims forceps and crescent blade. Remnants over cornea were cleaned with crescent blade and/or Algerbrush Pterygium burr. Hemostasis was achieved with bud or cautery. Pad and Bandage was done for 24 hours. Patient was called next day. Antibiotic steroid eye drops were given for 4 weeks and NSAID on as and when required.

For conjunctival Autograft technique, peribulbar anesthesia is given using Xylocaine 2% with adrenaline and Bupivacaine 0.5%. Speculum is used to open the eye. All surgeries were performed under operating microscope. Superior rectus bridle suture is used to stabilize the eye ball and to ensure good exposure of donor area. Body of pterygium is dissected about 4 mm from limbus, down to bare the sclera and reflected over cornea. The pterygium head is avulsed using Lims forceps and crescent blade. Remnants over cornea were cleaned with crescent blade and/or Algerbrush Pterygium burr. Hemostasis was allowed to occur spontaneously without the use of cautery as little oozing is useful as it helps in adherence of graft to the bed.¹⁰

As the donor site is usually superior or supero-temporal, sub conjunctival injection of either local anesthetic solution is given to separate the conjunctiva from the tenon. Dissection between conjunctiva and tenon capsule is done so as to get a 1 mm oversize graft without tenon's tissue. The limbal edge of the graft was cut to contain a thin rim of corneal epithelium. The recipient bed is dried with cellulose sponge and graft was quickly flipped over to the sclera. Proper orientation was maintained, with the epithelium side up and the limbal edge toward the limbus.¹⁰ Graft was pressed for 3-5 minutes and smoothed with cellulose spear. Graft stabilization was checked with a spear and speculum was removed. No subconjunctival injection is given post operatively because of fear of graft displacement. Pad and bandage was done for 48 hours. Patients were called for follow up after 2 days. Then antibiotic steroids combination eye drop and lubricating eye drop is prescribed for 4 weeks tapering and NSAID as and when required.

Patients of both groups were called for follow up at 2 weeks, 1 month, 3 month and 6 months, 9 months and 1 year. The criterion for recurrence was determined as invasion of cornea more than 1 mm in diameter beginning from the limbus by fibrovascular tissue derived from the operation site.¹¹⁻¹³

Data analysis and statistics was done using Microsoft Excel 2007 and SPSS software.

3. Results

Data of 38 patients who came for pterygium excision was shortlisted and analyzed. Patients were divided into two

Table 1: Procedurevs sex distribution

	Male	Female	Total	Percentage
Without Graft	8	11	19	50.0
With Graft	7	12	19	50.0
	15	23	38	
	39.5	60.5		

Table 2: Age Sex Distribution

Age	Male	Female	Total	Percentage
18-20		1	1	2.6
21-30	4	3	7	18.4
31-40	4	5	9	23.7
41-50	4	4	8	21.1
51-60	3	7	10	26.3
61-70		1	1	2.6
71-75		2	2	5.3
Total	15	23	38	
Percentage	39.5	60.5		

Table 3: Procedurevs right/left distribution

	RE	LE	Total	Percentage
Without Graft	13	6	19	50.0
With Graft	11	8	19	50.0
Total	24	14		
Percentage	63.2	36.8		

Table 4: Procedure wise recurrence

Result	Graft	Bare	Total	Percentage
Recurrence	1	6	7	18.4
No Recurrence	18	13	31	81.6
Total	19	19		

Significant < 05

groups with 19 eyes each. In group A (bare sclera method), there were 8 males and 11 females, In Group B (Autograft), there were 7 males and 12 females (Table 2). 19 patients each were operated by each method – bare sclera technique and Conjunctival autograft with cut and place technique.

Their age varied from 18 to 75 years and mean age was 43 year (Table 2). Majority of patients were in the age group of 21 to 60, females were more 23(60.5%) as compared to males 15(39.5%). Right Eye was predominantly involved 24 (63.2%) as compared to left Eye 14(36.8%)(Table 3).

Postop followup was done for 6 months to 12 months. There were no intra operative complications. Visual acuity was not affected (increased or decreased) in the post op period. Cosmetic effect of the patients was satisfactory. Donor site healed without any problem. There was no graft loss on 3rd Post operative day, no graft necrosis or postop bleeding observed in any of the cases. Common postop complaints were irritation, photophobia, watering, foreign body sensation and redness. No vision threatening complication was observed in any case.

In group A, recurrence was observed in 6 cases out of 13 cases between 4-9 months. Out of these, 2 were grade I and 4 were grade II cases. In group B, there was only one case of recurrence that was observed after 5 months of surgery. This was a case of recurrent pterygium grade III. Comparing the groups, revealed that recurrence was higher in the bare sclera group six cases out of 19 (31.6%) as compared to the conjunctival autograft group that is one case out of 19 (5.3%) (Table 4).

4. Discussion

Aim of pterygium surgery is to excise the fibrovascular tissue and preventing its recurrence. The recurrence of pterygium after surgical treatment remains a problem. Because of the difficulty in controlling this condition, various treatment modalities including radiotherapy, antimetabolite or antineoplastic drugs, conjunctival flap, and conjunctival or limbal autograft transplantation have been proposed.¹¹

In bare sclera technique, 6 (31.6%) out of 19 eyes had recurrences. Results of our study is comparable to other studies as well. Demireller and colleagues reported 8 (42%) recurrences in 19 eyes treated by bare sclera technique.¹⁴ Youngson declared the pterygium recurrence rate as 37% in 100 cases with the same technique, and concluded that this process is unhealthy and should not be used.¹⁵ Recurrence developed in 8 (38.09%) of 21 cases in another series treated with excision and bare sclera technique by Alpey.¹⁶ This technique is therefore not much recommended worldwide because it has no advantages other than being simple and time-saving.

The sutureless and glueless cut and place technique of conjunctival autograft is easier to learn, less surgical time as compared to glue and suture techniques, less postop patient discomfort and similar rate of postop recurrences. In the suture technique, the reason of pain is due to non buried suture knots and inflammatory process around the sutures.¹⁷ On the other hand, patients reported little pain in no suture no glue method. The surgical time was also lesser as compared to suture and glue technique.

The cost of surgery is another important factor. Fibrin glue is very expensive and with very short shelf life after mixing. Further, its availability is another problem as it is not readily available in all parts of the country. Starck and colleagues proposed that the efficient size of the autograft decreases the recurrence rate and this thesis is supported by Allan and colleagues.^{18,19} The total recurrence rate in their study was 7 cases (38.14%) out of 38.

In Pterygium excision with autograft the recurrence was observed in one case (5.3%) out of 19 cases. While it has been reported 0% to 6.8% in the literature^{10,12,20–22}.

Some authors prefer lower bulbar conjunctiva for autografting, considering that an autograft from superior bulbar conjunctiva might cause problems in probable filtration surgery²³ in future.

The disadvantages of conjunctival autograft technique are long surgical time, need of peribulbar anaesthesia, limitation of autograft diameter, problems in future probable filtration surgery. In spite of all these difficulties, the recurrence rate is low with autograft. The disadvantage of long surgical time becomes advantage with low recurrence and no need for additional surgical interventions. Though we were novice when started, still there was not a single case of graft loss. Thus the fear is baseless.

5. Conclusion

Recurrence rate of pterygium after excision is more in bare sclera technique as compared to conjunctival autograft technique. Also Conjunctival Autograft technique is a better technique than bare sclera technique in larger pterygium Grade II-IV and recurrent pterygium.

6. Source of Funding

None.

7. Conflict of Interest

None.

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